

REMARKS

This is a full and timely response to the Office Action mailed July 11, 2007, submitted concurrently with a one month Extension of Time to extend the due date for response to November 11, 2007.

Claim 1 has been amended to more particular define the present invention. Further, new claims 6-8 have been added to further define the present invention. Support for the claim amendments and new claims can be found on page 10, lines 11-20, page 12, line 11, and the Examples of the specification. Thus, claims 1-8 are pending in this application.

In view of this response, Applicants believe that all pending claims are in condition for allowance. Reexamination and reconsideration in light of the following remarks is respectfully requested.

Rejection under 35 U.S.C. §102

Claims 1-5 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Kimura et al. (U.S. Patent No. 6,228,480) (hereinafter "Kimura"). Applicants respectfully traverse this rejection.

To constitute anticipation of the claimed invention under U.S. practice, the prior art reference must literally or inherently teach each and every limitation of the claims. Here, in this case, based on Applicant's review of the cited reference and the Examiner's comments, Applicant submits that all of the limitations of the claims are not taught in Kimura et al., with particular emphasis on the limitations "*A photocatalyst-containing silicone resin composition comprising TiO₂, a Zr containing compound, a hydrolyzable silicone resin and a Si containing compound containing SiO₂ particles*", "*wherein a content of said Zr containing compound in terms of an oxide thereof is 0.005 to 0.1 parts by weight with respect to 1 part by weight of Ti O₂, a content of said Si containing compound in terms of an oxide thereof is 0.5 to 6.0 parts by weight with respect to 1 part by weight of TiO₂, and a content of said SiO₂ particles is 0.1 to 3 parts by weight with respect to 1 part by weight in terms of an oxide of said hydrolyzable silicone resin*" and "*wherein the TiO₂ is dispersed in said silicone resin composition*".

Kimura relates to a photocatalyst-carrying structure, which is useful for antifouling, cleaning water, deodorization, and so on. As indicated by the Examiner, Kimura discloses the use of colloidal silica, titanium dioxide and a silicon compound such as an alkoxy silane compound in the photocatalyst-carrying structure. However, as clearly shown in FIG. 1, the photocatalyst-carrying structure of Kimura is essentially formed with a substrate, a photocatalyst layer and an adhesive layer disposed between the photocatalyst layer and the substrate. The adhesive layer contains (i) a silicon modified resin such as a acryl-silicon resin or epoxy-silicon resin, (ii) a resin containing colloidal silica, and (iii) a resin containing polysiloxane while the photocatalyst layer contains the titanium dioxide and a metal oxide or a metal hydroxide gel. Thus, the photocatalyst carrying structure of Kimura is a two-layer configuration comprising forming the adhesive layer on the substrate, and then forming the photocatalyst layer on the adhesive layer. In other words, the titanium dioxide and metal oxide or metal hydroxide gel are present in a separate layer (i.e. photocatalyst layer) from the silicon modified resin, resin containing colloidal silica, and resin containing polysiloxane (i.e. adhesive layer).

In contrast, the photocatalyst-containing silicone resin composition of the present invention comprises TiO_2 , a Zr containing compound, a hydrolyzable silicone resin and a Si containing compound containing SiO_2 particles (as essential components) added together in a single silicone resin composition without separating the TiO_2 , Zr containing compound, hydrolyzable silicone resin and Si containing compound containing SiO_2 particles in different layers. In other words, in the photocatalyst-containing silicone resin composition of the present invention, the TiO_2 is dispersed throughout the composition and is not limited to a particular layer in the composition since the claimed composition is homogeneous and does not have layers. Therefore, a coated article of the present invention is formed by applying the claimed composition on a substrate (e.g. glass substrate), and then heat curing the applied composition (see the Examples described in the present specification). As a result, the present invention does not need to separately form an adhesive layer to bind its composition to the substrate.

In addition, the Examiner indicates in the Office Action that “*There is 35% SiO_2 in the adhesive layer and 65% metal oxide gel in the Z-1 photocatalytic layer. Of the 65% composition, 40% is the Si containing compound (col. 4 lines 20-21). The calculation for the SiO ratio is :*

(35/(65x40)) 1.3.” However, Applicants strongly believe that this calculation is not incorrect since the SiO₂ ratio is calculated using both of the 35% SiO₂ in the adhesive layer and the 65% metal oxide gel in the Z-1 photocatalytic layer which is a different layer from the adhesive layer. That is, the estimated SiO₂ ratio is not the SiO₂ ratio in a single composition but the combination of two different compositions (i.e. adhesive layer and photocatalytic layer).

Further, the Examiner indicates that “*Of the 65% composition, 40% is the Si containing compound (col. 4, lines 20-21)*”. However, column 4, lines 20-21, of Kimura teaches that the resin to be used for forming the adhesive layer is selected from a group consisting of silicon-modified resin comprising 2-60% by weight of silicon, a resin comprising 5-40% by weight of colloidal silica and a resin comprising 3-60% by weight of polysiloxane. Therefore, column 4, lines 20-21, of Kimura do not relate to the metal oxide gel present in the photocatalyst layer, as described in column 6, lines 38-39 of Kimura.

It should also be noted that, in TABLE 3 of Kimura, the “content*²” is defined as a percent by weight of either a metal oxide gel or a metal hydroxide gel contained in a dried adhesive layer. However, Applicant believe that this definition of “content*²” is an obvious error since, as defined in claim 1, and in column 6, lines 38-39, of Kimura, the metal oxide gel or the metal hydroxide gel should be contained in the photocatalyst layer. Therefore, Applicants believe that the “content*²” should be defined as percent by weight of either a metal oxide gel or a metal hydroxide gel contained in a dried photocatalyst layer

Furthermore, it should also be noted that the Zr compound is one of the essential components of the present invention. In contrast, as described in column 6, lines 62-65, Kimura teaches the use of zirconium as a metal in the metal oxide or the metal hydroxide gel. However, zirconium is not an essential component in the photocatalyst-carrying structure of Kimura. It is only an optional component and merely one of many metal elements listed, i.e., silicon, aluminum, titanium, zirconium, magnesium niobium, tantalum, tungsten, tin, etc. In addition, since zirconium is present as the metal oxide or the metal hydroxide gel in the photocatalyst layer, Applicants believe that Kimura fails to teach or suggest the feature of claim 2 wherein the content of the Zr containing compound is 0.005 to 0.02 parts by weight and is homogeneously present in the photocatalyst-containing silicone resin composition of the present invention.

From the above reasons, Applicants believe that the photocatalyst-containing silicone resin composition of the claims can be clearly distinguished from the photocatalyst-carrying structure of Kimura.

It appears that the Examiner is interpreting the photocatalyst-carrying structure of Kimura as one composition even though it comprises different component layers (photocatalyst layer, adhesive layer and substrate). Thus, to further distinguish the claims from such an interpretation, Applicant have amended claim 1 to recite that the TiO_2 is dispersed in said silicone resin composition and added new claims to specify that the TiO_2 is uniformly dispersed in said silicone resin composition, the claimed composition is homogeneous, and the claimed composition is a single layer composition.

Thus, for these reasons, withdrawal of this rejection is respectfully requested.

CONCLUSION

For the foregoing reasons, all of the claims now pending in the present application are believed to be clearly patentable over the outstanding rejections. Accordingly, favorable reconsideration of the claims in light of the above remarks is courteously solicited. If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the below-listed number.

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Respectfully submitted,

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